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ABSTRACT

The rationale for using multiple evaluation strategies in a comprehensive program evaluation is described. Examples are given of eleven strategies used in the evaluation of the Experience-Based Career Education project developed by the Northwest Regional Educational Laboratory through sponsorship of the National Institute of Education. Strengths and limitations are cited for the use of pre- and posttesting in an experimental design, student followup and longitudinal studies, student case studies, content analysis, adversary hearing, cost study, ethnographic study, use of local study committee, organizational study, panel review by experts, and survey questionnaires. Six criteria, proposed for consideration in determining the best evaluation strategies to use, are discussed. These are cost, timing, credibility of findings, degree of obtrusiveness, amount of coordination needed, and efficiency. (Author/RC)

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THE USE OF MULTIPLE STRATEGIES IN EVALUATING AN EXPERIENCE-BASED CAREER EDUCATION PROGRAM

No. 9

Thomas R. Owens, Joseph F. Haenn and
Harry L. Fehrenbacher

Northwest Regional Educational Laboratory

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THE USE OF MULTIPLE STRATEGIES IN EVALUATING AN EXPERIENCE-BASED CAREER EDUCATION PROGRAM[1]

Within the past two years, the concept of educational evaluation has become increasingly associated with that of providing and using information to analyze alternatives and improve the decision-making process (Stufflebeam, 1971). Much of the methodology of evaluation, however, has not kept pace with the needs for improved decision making. Frequently evaluators tend to think of using only statistically-based experimental design models, perhaps because these have been emphasized in their own graduate training programs. Quite often a gap exists between the narrow empirical findings of the usual evaluation report and the much broader-based factual information required for programmatic decision making. Traditional evaluation designs tend to severely limit the variables being considered, overlooking many other real issues. Such evaluation often emphasizes the easily quantified elements while neglecting the more subjective, less tangible points that may be more directly related to the decision-making process itself. For example, the decision whether to adopt a new school curriculum is seldom based solely upon the research data related to students' academic performance. Other variables, such as the congruence of the new curriculum with the existing school curriculum and facilities, the cost and willingness of the school board to fund the new curriculum and the estimated level of acceptance of the project by students, educators and the community must also be considered. These types of considerations are typically difficult or impossible to examine with the prevalent statistical models. Other suitable designs are needed to expand the evaluators' "bag of tools," thus allowing them to select the strategies or combination of strategies that best fit a given situation.

Robert Stake (1975) has written about his strong preference for an alternative to traditional preordinate evaluation approaches. Preordinate evaluation, advocated by researchers like Popham (1969), relies heavily upon the prespecification of specific program objectives. Stake states that preordinate plans for the evaluation of educational

programs emphasize " 1) statement of goals, 2) use of objective tests, 3) standards held by program personnel, and 4) research-type reports" (Stake, 1976, p. 10). The alternative favored by Stake is responsive evaluation. "An educational evaluation is responsive evaluation 1) if it orients more directly to program activities than to program intents, 2) if it responds to audience requirements for information, and 3) if the different value perspectives of the people at hand are referred to in reporting the success and failure of the program" (Ibid., p. 10).

The authors of this paper argue that in a comprehensive evaluation that aims to serve the information needs of multiple audiences there is a need for both a preordinate and a responsive evaluation. Legitimate audience needs generally include answers to both the question of how well a program achieved its stated objectives as well as what program participants actually did in the program and why.

After presenting a brief description of Experience-Based Career Education (EBCE) and its demonstration project in Tigard, Oregon, called Community Experiences for Career Education, $(CE)_2$, this paper will discuss eleven evaluation strategies that have been used with $(CE)_2$, assess the strengths and limitations of each strategy, show some relationships among the strategies, discuss ways of communicating evaluation findings, and present some suggestions useful to others contemplating the use of multiple evaluation strategies.

II. COMMUNITY EXPERIENCES FOR CAREER EDUCATION--$(CE)_2$

Community Experiences for Career Education, $(CE)_2$, is one of four Experience-Based Career Education (EBCE) programs being tested under the auspices of the National Institute of Education. Operated in Tigard, Oregon by a nonprofit community corporation, the program is directed by the Northwest Regional Educational Laboratory (NWREL). $(CE)_2$ is composed of approximately 60 high school juniors and seniors and provides a comprehensive high school education through experiences in the community.

A primary goal of the $(CE)_2$ program has been to integrate a student's knowledge of a variety of careers with the acquisition of cognitive, interpersonal and affective skills through a series of planned experiences with identified learning outcomes. Emphasis is placed on the assumption of individual student responsibility for his or her own learning. Four characteristics help describe the essential elements of $(CE)_2$:

1. The learning program evolves from adult activities in the community. It is reasoned that if the learning activities are based directly on adult tasks and roles in the community, learning will be recognized as more relevant by youth in preparing for the transition to adulthood.
2. The program is based on experiential learning, actively involving students in the daily work of community life. This "hands-on" approach to learning has long been recognized as an effective learning strategy and $(CE)_2$ is attempting to implement this approach in a comprehensive program.
3. The curriculum of $(CE)_2$ is fully integrated. Just as the salesman or foreman does not think of his interactions with people strictly in terms of grammar, vocabulary or psychology, the $(CE)_2$ curriculum also applies no artificial distinction between the "disciplines."
4. $(CE)_2$ is a fully individualized program. The learning goals as well as the learning strategies are varied to meet the needs, interests and abilities of each student (Owens and Fehrenbacher, 1975).

Although the EBCE demonstration site operating in Tigard, Oregon, differs from the EBCE versions developed at the other regional educational laboratories in areas such as program governance, it contains essential characteristics common to all four versions.[2]

During the 1975-76 school year, the EBCE model developed by NWREL was successfully implemented in four pilot sites in the Pacific Northwest. Due largely to funding made available under Part D of the Vocational Education Act by the U.S. Office of Education, the EBCE program developed by the four regional educational laboratories will

become operational in new sites in 42 states during the 1976-77 school year. Since some of the individual elements of EBCE are shared by other comprehensive secondary education programs, the evaluation challenges presented by EBCE can be applicable to many settings today.

III. EVALUATION STRATEGIES USED WITH $(CE)_2$

A comprehensive formative and summative evaluation of the $(CE)_2$ program has occurred over the past three years that looks both at outcomes and what Cronbach (1975) terms "mediating events." This evaluation, while focusing on student learning, has also examined other areas such as program management, costs and employer and community involvement.

Because the $(CE)_2$ program was designed to achieve a wide range of cognitive and affective outcomes in an individualized manner, the evaluators realized that no single research methodology would be adequate. Therefore, a combination of various methodologies was employed under the assumption that the weaknesses of any one method would be counterbalanced by the strengths of another.

In planning the $(CE)_2$ evaluation activities for 1974-75 a detailed evaluation design was prepared by the NWREL evaluation team that included a matrix of $(CE)_2$ outcome goals along one dimension and evaluation instruments along the other dimension. Thus, for each goal, at least one primary and one secondary instrument were identified that would provide information addressing that goal. Since there are other types of evaluation questions asked by various audiences that go beyond the project goals, a second matrix was developed in retrospect. This second matrix involves an evaluation design in which some of the broader important evaluation questions are displayed along one dimension and separate evaluation strategies (each focusing on separate issues and audiences and containing its own set of instruments) are displayed along the other dimension.

Each of the eleven strategies involved the development and/or use of different evaluation instruments. Table 1 on the following page shows a sample of evaluation questions that require multiple evaluation strategies. As indicated in that table, some questions can be answered through more than a single evaluation strategy.

Table 1

MATRIX OF SELECTED EVALUATION QUESTIONS BY EVALUATION STRATEGIES

QUESTIONS	Comparative Testing Involving Experimental Design & Psychometric Analysis	Student Case Studies	Student Longitudinal Followup Study	Advocacy Hearing	Cost Study	Ethnographic Study	Formative Evaluation	Local Study Committee Review	Organizational Study	Panel Review by Experts	Survey Questionnaires
1. Compared with students in the regular high school, how well are $(CE)_2$ students performing in Basic Skills, Life Skills and Career Development?	P*		S								S
2. What activities do $(CE)_2$ students actually use to help them improve in Basic Skills, Life Skills and Career Development?		P				S	P				S
3. What do the participating students, staff, parents and employers think of $(CE)_2$? What do they think are the major strengths and weaknesses of the program?		S		S				S			P
4. How do students in $(CE)_2$ spend a typical day? What are they gaining from experiential learning, if anything?		S				P	P				
5. What role does the employer play in $(CE)_2$?		P		S							S
6. What types of things should be kept in mind before deciding if other districts should adopt an ESCE program/				P	S	S		S		P	
7. What is the formal and informal environment of the project? What influence is the informal structure having? What organizational relationships exist?		S				P			P		
8. To what extent are various student outcome measures, such as reading improvement, related to other variables such as a student's grade level, sex, number of learning levels completed, or vocational aspirations?	P						S				
9. What type of students tend to complete the greatest number of student projects during the year? What is the quality of their projects?	P	P					P				
10. How do students progress during the first year in $(CE)_2$ compared with their progress during their second year?	P	S									
11. What do national experts in school administration, career education, business and labor think of the program after reading about it and seeing it in action?										P	
12. What plans are recommended by the local school district administrators and community for the continuation of $(CE)_2$ as federal funding decreases or ceases?								P			
13. What are the staff instructional costs of $(CE)_2$ in comparison with those of other secondary academic and vocational programs?								P			
14. Are students able to identify and secure resources and materials for supporting their learning plans? Where are they getting them?		P				S	P				S
15. Compared with their counterparts who attended the regular high school program in the junior or senior year, how successful are the $(CE)_2$ graduates in their jobs, education and personal satisfaction with life?											
16. What problems existed in the planning and organization of ESCE?									P		

* P represents evaluation strategies considered as primarily important to the particular question.
S represents evaluation strategies considered to be of secondary importance for answering a particular question.

Table 2 displays the evaluation strategies by intended audiences. Five basic audiences seem applicable to EBCE and other large-scale development projects: 1) the funding agency (in this case, NIE), 2) the research community, 3) persons in school districts considering the potential adoption of the project, 4) parents and local community where a project is being developed, and 5) the project staff. As with Table 1, each evaluation strategy can answer more than a single question and can also serve more than one intended audience. Although the reader may disagree with the authors' selection of primary and secondary audiences for any particular strategy, several points emerge from Table 2. Information resulting from some strategies is probably of little or no interest to some audiences. For example, results of a local district study committee are probably of no interest to the research community while the comparative testing occurring with a true experimental design framework is likely to be of high interest to this group. A second point illustrated by Table 2 is that some audiences, because of the nature of the decisions they need to make, will be interested in information resulting from a great variety of evaluation strategies. For example, educators in districts that are considering the potential adoption of the EBCE project are likely to have a much greater variety of information needs than are parents and members of the local community in which the project has been developed and operated.

Table 2

ANALYSIS OF EVALUATION STRATEGIES BY INTENDED AUDIENCES

Type of Evaluation Strategies	Intended Audiences				
	NIE	Research Community	Adoption Sites	Parents & Local Community	Project Staff
Student Outcome Focus					
1. Comparative testing with experimental design	P*	P	S		
2. Student followup or longitudinal studies	S	S	P	P	S
3. Student case studies			P	S	S
4. Content Analysis			P	S	S
Program Outcome Focus					
5. Adversary hearing	S		P	S	
6. Cost studies	S		P		
7. Ethnographic study	S	S	P		S
8. Local study committee review			S	P	
9. Organizational study	P	S	P		
10. Panel review by experts	P		P		S
11. Survey questionnaires	P		P	P	P

* P represents primary audiences for each evaluation strategy

S represents secondary audiences for each evaluation strategy

Each of the eleven evaluation strategies identified in Tables 1 and 2 is described briefly below. Each strategy has a particular audience and set of evaluation instruments from which data were collected and analyzed.

1. Comparative Testing

In order to determine student gains in Basic Skills, Life Skills and Career Development which are attributable to participation in EBCE, an experimental design was used in 1974-75 that involved pre- and posttesting of the experimental and control group students. From the total pool of student applicants for $(CE)_2$, students were randomly assigned to participate in $(CE)_2$ or the control group. Students in the control group remained in the regular school program throughout the year. Instruments used included standardized tests such as subtests from the Comprehensive Test of Basic Skills, instruments developed by Educational Testing Service that were used commonly on EBCE programs in three other parts of the country, and instruments developed locally by NWREL. Correlation and psychometric analyses were run to determine the relationship among student outcome measures and between various outcome and student background measures. These analyses were also run to assess the reliability and validity of the instruments used and to determine the differential program effects upon various $(CE)_2$ students.

2. Followup and Longitudinal Studies

One of the tasks of the Educational Testing Service in its external evaluation of EBCE during 1974-75 included the followup of students who have graduated from $(CE)_2$ since it began and of students who had dropped out of the program. Special student interviews were developed and used for this purpose. The intent of this study was to assess the effects of $(CE)_2$ upon students' occupational, educational and personal life after they had graduated from the program. A study was conducted the following year to assess the first and second year impact of $(CE)_2$ on students who remained with the program for both years. Preliminary thought

was also given to a longitudinal study of the $(CE)_2$ graduates, although the number of such graduates at the time was rather small.

3. Student Case Studies

Intensive case studies of six $(CE)_2$ students selected by a stratified random sample were conducted by the NWREL evaluation team during 1974-75. Because the $(CE)_2$ program is complex, highly individualized and involves multiple, interrelated learning strategies and a wide spectrum of student outcomes, the case-study approach to evaluation seemed appropriate. It is in keeping with the philosophy and practice of $(CE)_2$ and concentrates on the individual student. Case study students were selected so as to represent juniors and seniors and students with high and low motivation. Multiple data collection strategies were used in the case studies to obtain a cross validation of information about each of the students. These methods included: a) observation of students at employer sites three times a year and interviews with the students' employer instructors, b) parent interviews, c) indepth student interviews four times during the year, d) interviews with program staff, and e) a review of student-completed projects and other documents. A total of 23 records were identified as secondary sources of data for each student and a set of guide questions was prepared for analyzing each secondary source. A more complete description of the rationale, procedures and findings from the case studies is available (Fehrenbacher, Owens and Haenn, 1976).

4. Content Analysis

Since EBCE is a highly individualized program and its operations and products well documented, the evaluators agreed to use student and project documents as an important part of the evaluation. Content analysis (the systematic classification and use of existing documentation) became a valuable tool for transforming existing file data into a form usable for evaluation. Content analysis was applied to four types of data: 1) student projects and

written reports, 2) student records of program activities begun and completed, 3) the list of employer sites used with $(CE)_2$, and 4) the $(CE)_2$ Board minutes.

The Life Skills projects and resulting written reports for each of the six case study students were retained by the learning managers throughout the year and given to the NWREL evaluation unit for analysis. The evaluators identified 12 criteria they wished to apply to each student project. These criteria included the extent to which Basic Skills work was integrated into the project, the extent to which the project fit a student's interest areas, and the extent to which the project met the objectives for the Life Skills area in which it was written. A two-page written description of each student was prepared together with a rating guide involving a five-point scale for each criterion. An experienced high school curriculum director not familiar with EBCE was hired as a consultant and spent four days applying the criteria to each case-study student's projects. The consultant's ratings were keypunched and analyzed for descriptive statistics and an assessment of the general areas of strengths and weaknesses of projects in each of the five Life Skills areas was reported.

Student records of program activities begun and completed were recorded by the project staff and provided to the evaluators for analysis. These data allow the evaluators to learn the average length of time needed to complete projects and other activities, the competencies most and least frequently completed and, on a time trend basis, to determine the pattern of program activity completion over the course of the entire school year.

The list of cooperating employer sites was analyzed and categorized into the 15 U.S. Office of Education occupational clusters in order to see which clusters were most and least heavily represented and to determine if any clusters were not represented.

The monthly $(CE)_2$ Board minutes were analyzed to determine the content nature (and frequency) of the Board's discussions and

to determine whether most of the time was spent by the Board in listening to progress reports, discussing operations or discussing policy recommendations. The results of this analysis were displayed by month and indicated that the Board was, in fact, a policy making Board.

5. Adversary Hearing

As a way of providing information directly relevant to potential adopters of EBCE, a prototype adversary hearing was held and videotaped. The hearing, based on issues considered relevant to the adoption decision by school district administrators, presented witnesses and arguments favorable and unfavorable to the adoption of EBCE and provided for limited cross examination of witnesses and testimony presented. Two consultants from Midwestern universities served as the adversaries. A professor of law and several other consultants assisted the NWREL evaluators in planning and staging this abbreviated hearing. Although the prototype hearing was quite limited in time and resources utilized, the general approach seems to have merit in future evaluations (Hiscox and Owens, 1975).

6. Cost Studies

Two cost studies regarding $(CE)_2$ operations were conducted by two outside consulting groups. One study investigated the ongoing costs of $(CE)_2$ in comparison with secondary academic and vocational programs in three selected Oregon school districts. Direct daily staff costs of instruction for individually sampled students were obtained but lesser costs such as physical plant, equipment and transportation were not computed. By computing direct instructional costs on a sampled student basis, it was possible to examine the wide variation of student costs within the same academic program, as well as to compare program totals (Gourley, Gourley and Delos, 1975).

In the second cost study conducted in 1974, an investigation was made of the costs being absorbed by employers when they accept a $(CE)_2$ student or students on assignment at their sites

(Institute for Educational Management, 1974). Costs were analyzed in terms of: space occupied by the student equipment used in instruction, administrative costs, consumable supplies related to instruction and instructional time. A representative sample of 30 out of 95 employer sites was selected based on stratification by size and type of business. Employer interview data were analyzed separately for students on an exploratory level and those on a more intensive learning level.

7. Ethnographic Study

One of the strategies used by Educational Testing Service as part of its EBCE external evaluation contract with NIE was that of employing anthropologists to conduct an ethnographic study at each of the four EBCE demonstration sites. The ethnographic study of $(CE)_2$ was intended to be descriptive rather than evaluative. "They are to provide a background for the interpretation of systematically gathered evaluative data, rather than serving as a substitute for the latter." (Durgin, 1975, p. 3). The resident anthropologist spent approximately seven months in daily contact with $(CE)_2$ to describe the informal and formal activities that characterize the project's learning center and employer sites. The main focus was "on student behaviors and conceptions rather than on those of staff, employers or parents." (Ibid., p. 4). Methodologies used included student observation and open-ended interview with students and staff.

8. Local Study Committee Review

In 1974 the Tigard School District formed a study committee for six months to make recommendations regarding the future of $(CE)_2$. This 12-member committee was composed of the $(CE)_2$ Director, several participating employers, two parents, a student and administrators from the Tigard High School and the District. The committee reviewed national literature related to educational alternatives, studied the NWREL interim evaluation findings, and conducted a questionnaire survey of participating employers

to determine their continued commitment to $(CE)_2$ providing the Tigard School District assumed responsibility for funding and operating the program (Beier, et.al., 1974).

9. Organizational Study

As part of the external summative evaluation contract, Educational Testing Service conducted an organizational study of EBCE at each of the four demonstration sites. A sociologist was responsible for this assignment. The sociological analysis focused upon the program's history, its organizational structure and interorganizational relationships (Trask, 1975). Data used for this report were based upon interviews with project staff at each of the four regional laboratories participating in the development of EBCE and on analysis of institutional records, particularly the quarterly progress reports submitted by each Laboratory to NIE.

10. Panel Review by Experts

During the first and second years of EBCE operation, a panel review team was used. In the first year the team that visited and reviewed $(CE)_2$ consisted of a college dean, who is nationally known in career education, and the personnel manager at one of the large participating employer sites in Oregon. Their comments helped influence revisions in the program for the following year. In the second year of operation, NIE commissioned a five-person site review team made up of an assistant superintendent for curriculum and instruction of a Midwestern school district, an education program director of an international corporation, a Teamsters Union director of research and education, an executive of a private research institute and the dean of a college of education. This team spent three days at the demonstration sites for each of the four participating educational laboratories obtaining information on evaluation questions or issues related to the project's objectives that were agreed on jointly by the project staffs at the four sites, NIE and the review team members. Prior to visiting each site, the team

reviewed each site's operation plan, quarterly reports and evaluation reports. Upon arriving at each site, the team received a comprehensive briefing about the objectives and activities at the site followed by observation of students at the Learning Center and at employer sites and interviews with a sample of students, parents, employers and staff. Immediate feedback was given by the team to the project staff at each site at the conclusion of the visit. This was followed by a written report containing conclusions and recommendations.

11. Survey Questionnaires

The evaluation team has made extensive use of questionnaires to survey perceptions of the $(CE)_2$ program from various populations including students, graduates, staff, parents and employers. Questionnaires have also been used to elicit self-report data on student progress.

The primary audiences of questionnaire survey findings have been the developmental staff, NIE, parents and local community, and potential replication sites. This type of information also may be useful to participating school districts.

During the first year of evaluation questionnaires were utilized to obtain employer appraisal of overall student performance and both parent and student appraisal of the $(CE)_2$ program. In the second year, students, parents and employers responded to opinion surveys, rating forms and questionnaires. A $(CE)_2$ visitor questionnaire was also used, as was a project director questionnaire which served as a common base for describing essential characteristics of all four sites that were of interest to NIE. In this second year most of the study instruments used were developed cooperatively by evaluation staff members from the four regional educational laboratories and from the Education and Work Group of NIE. These instruments contained a common section relevant to all four sites and a unique section that allowed each site to measure variables of local interest. This combination thus allowed for common information

needs of NIE across sites as well as the special needs of each site.

Most survey questionnaires used in the 1974-75 evaluation of EBCE were developed jointly by Educational Testing Service and the internal evaluation staff at the four regional educational laboratories. These instruments were administered to project students, staff, parents, employers, project graduates and control group students.

IV. STRENGTHS AND LIMITATIONS OF EACH STRATEGY

Examination of the multiple evaluation strategies used with $(CE)_2$ uncovered certain strengths and limitations in each strategy. Table 3 identifies the essential characteristics of each strategy as used with $(CE)_2$ and the authors' assessment of perceived strengths and limitations of each.[3] This assessment should be useful to evaluators considering the use of such strategies in future evaluations.

Table 3

ASSESSMENT OF EVALUATION STRATEGIES USED

Evaluation Strategy	Essential Characteristics	Strengths	Limitations
STUDENT OUTCOME FOCUS			
1. Comparative testing within an experimental design	Compares project students' performance and progress with that of control and comparison group students to determine the program's treatment effects	1. Attempts to control factors jeopardizing internal and external validity 2. Generally acceptable standards and procedures for judging significant differences between groups	1. Ignores variations existing within treatments 2. Can interfere with the natural operations of the program 3. Often limited to only a few generalized outcome measures.
2. Graduate followup longitudinal study	Assesses the program's effects upon students' occupational, educational and personal life after they graduate from the program	Long-range student outcomes of the program are important and can only be assessed after students have graduated	As evaluation gets more remote in time from the program treatment, it becomes more difficult to establish causality
3. Student case studies	Provide evaluation and indepth description of a sample of students' performances, attitudes and interactions with peers, parents, staff and employers	1. Document individual treatment of students 2. Allow for a synthesis of much data about individual students 3. Utilize realistic subjective judgment for interpretation	1. Use of few students makes generalizations to the total population difficult. 2. Difficult to detect the evaluators' potential biases

Evaluation Strategy	Essential Characteristics	Strengths	Limitations
4. Content Analysis	Converts existing program documentation into usable form for evaluation purposes	1. Use is made of available program documentation 2. Unobtrusive method 3. Data collected are usually directly relevant to the program operations	1. Dependent upon the accuracy of the project staff in collecting and recording the information 2. Missing data may be impossible to retrieve or estimate
5. Adversary hearing	1. Presents opposing arguments and witnesses favorable and unfavorable to the program 2. Provides for cross-examination of witnesses and testimony related to the potential adoption of the program by other districts	1. Presents both pro and con evidence. 2. Provides for a cross examination of testimony 3. Particularly attentive to the information needs and time frame of decision makers considering program adoption	1. Decision makers may be influenced by the persuasiveness of the adversaries more than by their evidence 2. The qualifications of the two adversaries may not be balanced 3. Time limitations may cause a focus on only a few issues
6. Cost Studies	1. Provide information about the direct and indirect costs for employers participating with the program 2. Compare the program's cost with competing programs	1. Direct daily staff costs of instruction for individually sampled students are obtained 2. Developmental and instructional costs of the program are isolated 3. Opportunity costs to employers are assessed	1. Staff costs are computed but other costs, such as physical plant, equipment and transportation may not be 2. No attempt usually is made at a cost/benefit study

Evaluation Strategy	Essential Characteristics	Strengths	Limitations
7. Ethnographic Study	1. Describes the behaviors of program students in depth and depicts their interactions with peers, staff and employers 2. Describes the formal and informal structure of the program	1. Intensive description of the program based on daily observation and interaction of the anthropologist 2. Generally unobtrusive	1. Not easily subject to replication 2. Requires training and talent not available to most evaluation teams 3. Implicit value judgments of the anthropologist are sometimes hard to detect
8. Local study committee review	Reviews existing evaluation data and integrates them with a new survey in order to identify alternative recommendations regarding the future of the program	1. Reassesses the need for the program 2. Evaluates each proposed alternative 3. Actively involves some parents and community in evaluation 4. Integrates available and newly collected data	1. Such committees often lack necessary skill in interpreting evaluation findings or designing new instruments
9. Organizational study	Investigates the organizational structure and development of the program and its interorganizational relationships	1. Applies sound sociological constructs to the study 2. Integrates management reports and personal interviews	1. Focuses upon a narrow aspect of the project 2. The audience for this study is more limited than that for other evaluation studies

Evaluation Strategy	Essential Characteristics	Strengths	Limitations
10. Panel review by experts	Reviews existing management and evaluation reports, involves intensive onsite observations and interviews followed by an oral debriefing and later written report including conclusions and recommendations	1. Allows external experts to apply a fresh perspective in interacting with program-related people and in reaching conclusions and recommendations 2. Allows experts from various fields to work as a team in their project review 3. Allows for the use of nationally known talents that could not be afforded on a fulltime basis	1. External reviewers sometimes fail to comprehend the intentions or rationale for the program's operation 2. Experts sometimes let their personal values interfere with their recommendations 3. Inaccurate impressions are sometimes acquired because of the brevity of time
11. Survey questionnaires	Obtain perceptions of the program from students, staff, parents and employers and obtain self report data on student progress	1. Can obtain people's opinions in a confidential manner 2. Generally economical to collect	1. Subject to respondent misinterpretation or bias 2. May deal superficially with issues

V. RELATIONSHIPS AMONG THE EVALUATION STRATEGIES

The relationships among the eleven evaluation strategies described in the previous section are complex. The selection of these strategies was not done in advance through some grand design but rather evolved out of the expressed needs of the various audiences identified earlier in Table 2. Nevertheless, certain patterns emerge in retrospect that may be useful in designing future large-scale project evaluations.

As was argued in the introduction of this paper, a comprehensive evaluation needs both preordinate and responsive evaluation strategies. When viewed from this framework, the comparative student testing with an experimental design setting and the student followup/longitudinal study are primarily preordinate evaluation while the others are primarily responsive evaluation strategies.

Four evaluation strategies primarily were used to assess student outcomes: comparative testing, student followup studies, student case studies, and content analysis. The student case studies allowed the evaluators to gain new insights into indirect outcomes of the program which resulted in the addition of several new areas to be included on the student end-of-year questionnaire and the graduate followup interviews. Content analysis of student projects and resulting reports were part of the case studies and provided insights for some questions asked of all students on a year end questionnaire. Descriptions from the case studies were useful also in helping to account for significant differences found in the experimental design study.

The ethnographic study, while not focusing specifically on student outcomes, did describe student relationships with each other, the staff and employers. In areas where they overlapped, the ethnographic descriptions were generally consistent with those of the case studies. They were often based on a single student, however, and covered a wider perspective of that student's environment than did the case studies. The ethnographic description also differed in that it reported more frequently upon serendipities in student behavior gleaned from the anthropologist's daily presence at the learning center for approximately seven months.

Strategies to assess program outcomes as distinct from student outcomes were seldom closely associated, except that prior years' $(CE)_2$ evaluation reports (involving formative evaluation, comparative testing and survey questionnaire results) were reviewed and used by people involved in the adversary hearing, panel review members and members of the local district study committee.

VI. COMMUNICATING EVALUATION FINDINGS

Each of the evaluation strategies performed by personnel outside of NWREL, such as the ethnographic study by Educational Testing Service, has resulted in written reports. The expert review panel has also made an oral presentation of its findings to NIE and to certain members of Congress and their aides. The local study committee, in addition to its written report, also made an oral presentation to the Tigard School District Board of Education. In contrast with the written reports, the adversary hearing was videotaped and the edited tape served as the final product.

The 1974-75 EBCE evaluation report prepared by NWREL was organized along three dimensions: an executive summary, findings organized around the project objectives, and findings organized by evaluation instruments. The executive summary reported only the highlights of the report. Since some instruments covered more than a single project objective and since some objectives were measured by multiple instruments, it was felt that a second organizational structure was needed that listed each program objective and all the evaluation results related to that objective. This structure was developed especially for practitioners who were more interested in the project's outcomes than in how they were evaluated. The third structure, intended largely for a research audience, organized the findings according to the evaluation instruments used. This third approach included a description of each instrument and the populations with which it was used.

Requests from various audiences resulted in the need for separate evaluation summary documents. One summary was intended for parents,

employers and educators wishing a layman's view of the evaluation. This led to the development of an evaluation digest of about six pages that covered the main findings. Other audience requests led to the preparation of a two-page evaluation summary. Overhead transparencies that summarize eight or ten of the key evaluation findings have also been prepared and used with various groups. The EBCE evaluation findings collected by all four regional educational laboratories have been summarized by the National Institute of Education and included in nationally distributed EBCE brochures.

Perhaps the most important and successful strategy for communicating the evaluation results to interested parties and to potential adopters of EBCE has been to insure that the EBCE staff members at each of the regional educational laboratories responsible for assisting school districts in the adoption of EBCE are familiar with the findings. These persons provide information and technical assistance to districts wishing to use EBCE. The evaluation findings are often appropriate to use in their presentations and in responding to questions from visitors or potential adopters.

VII. CRITERIA FOR SELECTING MULTIPLE EVALUATION STRATEGIES

The evaluation strategies described in this paper would probably be useful in many large-scale development projects where the need is to provide evaluation information to a variety of audiences. Because time and evaluation resources are important constraints, it is generally wise to consider a variety of potential evaluation strategies and then to analyze the alternatives so as to select the minimal number of strategies needed to accomplish the job. Factors important to consider in determining priorities among potential strategies include: 1) costs, 2) timing, 3) credibility of findings, 4) degree of obtrusiveness, 5) amount of coordination needed, and 6) efficiency.

Costs

The eleven evaluation strategies described in this paper vary widely in cost. The comparative testing, student case studies, and ethnographic study were the most costly. The cost of some strategies such as the adversary hearing and local study committee review depend heavily on contributed time of nonproject persons. The amount of student and staff time involved should also be taken into consideration in determining costs.

Timing

The timing of an evaluation strategy is another crucial factor. Several elements of timing need to be considered including: 1) the deadline when the information is needed, 2) the length of time it would take to plan, collect and analyze data, and 3) the most appropriate time in the developmental cycle of a project for collecting certain data.

Credibility

Credibility of the findings is something that is often overlooked until an evaluation is completed and the data reported. Two examples from the $(CE)_2$ evaluation can be cited where the nature of the evaluators involved contributed to the credibility of the findings. In the adversary hearing, it was decided that the advocates for and against the future adoption of EBCE should be completely independent of the project. Also, when the national panel review team appointed by NIE was created, its credibility was enhanced by having on the team representatives of higher education, public schools, labor, industry and a private research organization. In addition, credibility of the evaluation findings can be enhanced when several evaluation strategies produce results that reconfirm or support what was found through the use of other strategies.

Degree of Obtrusiveness

Another important factor to consider in selecting evaluation strategies is the extent to which a given strategy will be obtrusive

and perhaps clash with the mission and activities of the project. Concern for maintaining a "low profile" was one of the key factors in considering an ethnographic study where a trained anthropologist could observe without disturbing the environment. The use of a true experimental design in evaluating $(CE)_2$ during the third year, because of its obtrusive nature, required delicate negotiation with the project operations staff.

Coordination

A point often overlooked in selecting multiple evaluation strategies is the amount and type of coordination needed. This coordination includes the amount and type of interference that may accrue to students, staff and others such as participating employers. It also includes the coordination of persons or agencies to be involved in the data collection for each strategy. One compromise the authors have used with the operations staff in managing the coordination of different evaluation strategies was the agreement at the beginning of the school year as to the maximum total amount of direct time of students and staff that would be used in any type of evaluation. This agreement then insured that the project's coordinator of research and evaluation would maintain a close planning and monitoring of student and staff time used in evaluation.

Efficiency

In serving as a discussant for an earlier draft of this paper presented to the Fourth Annual Pacific Northwest Educational Research and Evaluation Conference in May 1976, Joseph Hansen of the Portland Public Schools suggested an additional criterion, efficiency, be used in considering multiple evaluation strategies. He stated that "a strength of multiple strategies lies in the redundancy of information produced which provides the basis for establishing the reliability of findings. This redundancy is costly and may be obtained at the expense of foregoing the collection of other bits of unique information."[4]

The six factors discussed above are not meant to discourage other evaluators from using multiple evaluation strategies when appropriate.

Rather, they are meant to serve as a balance against the indiscriminate use of a "shotgun" approach to evaluation. As a result of considering the evaluation strategies presented in this paper, it is hoped that other evaluators will give thought to considering the use of a wider "bag of tricks" and will select those that are most appropriate to a program's needs.

FOOTNOTES

[1]This paper is based on an earlier version presented in Seattle, Washington at the Fourth Annual Pacific Northwest Educational Research and Evaluation Conference in May, 1976.

[2]An EBCE program has also been developed, pilot tested and disseminated by the Appalachia Educational Laboratory, Inc., in Charleston, West Virginia; Far West Laboratory for Educational Research and Development in San Francisco, California; and Research for Better Schools, Inc. in Philadelphia, Pennsylvania.

[3]The authors wish to express appreciation to Robert Stake for his critique and suggestions for improving an earlier version of Table 3.

[4]Based on discussion notes supplied to the author by Joseph Hansen.

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